openreach

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Suppliers' Information Note

For The Openreach Network

OPENREACH BACKHAUL EXTENSION SERVICES 155 (BES 155)

Service & Interface Description

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1. Introduction

This Suppliers Information Note (SIN) describes the interface provided with Openreach Backhaul Extension Services 155 (BES 155). Also provided is some additional general information on BES and on some of the physical aspects of the NTEs currently being deployed for new customer orders.

Backhaul Extension Services (BES) are high speed, point-to-point data circuits that are permanently connected and available 24 hours a day, 365 days per year. They provide a secure link between a Communication Providers network located in a BT Exchange, using a Licensed Facility and a Communications Providers network located in his own accommodation or a Licensed Facility in the BT Exchange.

Any specific technology mentioned in this document is current as of today, however it may be subject to change in the future. Should the specification of the interface be changed, this will be notified by a new issue of this SIN. Openreach reserves the right to adapt technology to deliver BES as new developments are made. All services are delivered over an uncontended transmission path.

SPECIAL NOTICE

Openreach originally notified Industry that this Product will longer be supported as from 1 April 2018

Please refer to briefing GEN061/14 (www.openreach.co.uk)

Support has been extended until March 31st 2021. As of April 1st 2020 this support is on a reasonable endeavours basis.

Please refer to ETH014/19 WES/WEES/BES (up to and including 1Gbps) withdrawal of service for end of life notification details.
Please refer to ETH011/20 WES/WEES/BES (up to and including 1Gbps) changes to the service level agreement for change of support notification.

2. Service Outline

2.1 General

The BES 155 service comprises a single uncontended transmission link between the Communication Providers (CP) network located in a Licensed Facility within a BT Exchange and a Communications Providers network located in his own accommodation or a Licensed Facility in the BT Exchange. with a Openreach provided NTE at each end of this link.

The services operate at 155,520 kbit/s (± 20ppm) and provide links between sites over radial distances of up to 25 km, or up to 15 km for BES Daisy Chain (see Table 1). The actual fibre route distance, maximum 40 km, will depend on the local physical circumstances and the Openreach plant configuration.

Openreach offers remote monitoring of this service, within tariff.

Backhaul Extension Services (BES)	155	
NTE Interface Option:	SC	
Maximum allowable Radial Distances between Customer Premises / Sites:	25 km	See Note 1
Maximum Route & Range Distances between Customer Premises / Sites:	40 km	See Note 2
Half / Full Duplex Operation:	Full Duplex	

Table 1. List of Services & Principle Features

Note 1. This is the direct distance "as the crow flies" between the two site locations.

Note 2. The maximum Route distance is the limiting factor of either the physical transmission limit between NTEs over the provided interconnecting transmission infrastructure, or alternatively the maximum range that the service may be extended to due to other technical considerations (e.g. optical loss).
A schematic of the BES 155 service arrangement is shown in Figure 1.

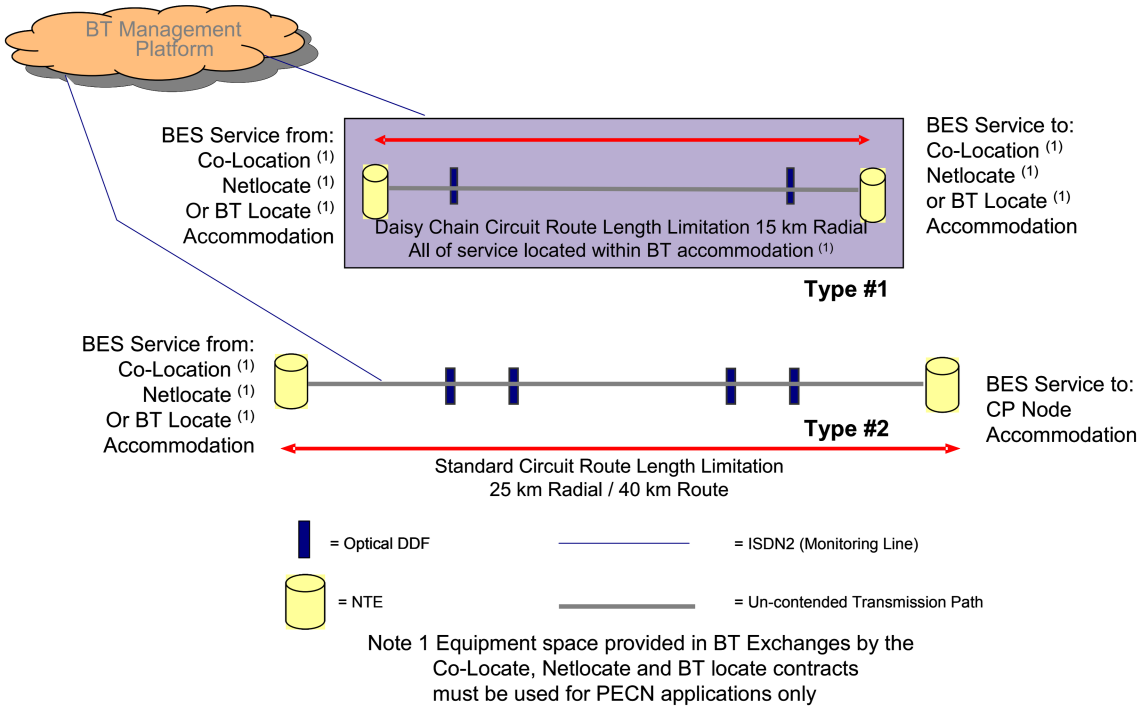

Figure 1. BES 155 Service Configuration

Note 3. Figure 1 depicts two separate circuit scenarios, not a combined service. The upper scenario (Type #1, NTE to NTE) represents a BES circuit with where both ends have a common serving exchange. The lower scenario (Type #2, NTE to NTE via a serving exchange) represents a BES circuit which ends are served from different exchanges

Note 4 The service cannot be purchased as a point-to-point circuit directly connected

between the CP and a 3rd party customer site.

It is envisaged that the BES 155 service will be employed for applications using and implementing the technologies of Synchronous Digital Hierarchy (SDH) and Asynchronous Transfer Mode (ATM). Framing and frame structure will be the responsibility of the customer and will be transported transparently.

2.2 Monitoring

The BT NTEs are connected to and monitored by an Openreach Network Management Centre and are 'polled' on a regular basis.

It is only possible to monitor the presence of optical conditions and the physical aspects of the NTE, to determine the functional status of each transmission link for maintenance & repair purposes.

3. Customer Interface

3.1 Interface Point

The interface is the Network Termination Point (NTP), i.e. the point of connection on the Openreach Network Terminating Equipment (NTE) for connecting CP equipment.

3.2 Connector

The interface connector is physically located on the Openreach NTE in the form of dual optical SC type sockets. A connection is made between the NTE and the CP equipment by using a suitable patch cable with a plug (male) to make a connection to the Openreach NTE.

The Service offers two types of interface options either 1310nm single-mode or 1310nm multi-mode.

The CP provides a suitable dual SC type patch or interconnection cable between the NTE and their equipment, of either 9/125µm single-mode fibre or 62.5/125µm multi-mode fibre depending on the requested interface type.

The SC type connector conforms to IEC 874-14 [1]. Attention is drawn to the Intellectual Property Rights (IPRs) set out in the preface of this agreed International standard. It is the responsibility of the supplier of the CP equipment to ensure that they have the necessary rights from the owner of the IPR. The IPR owner has stated that they are willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world.

3.3 Transmission

The single-mode variant of the interface complies with Table 1/G.957, Intra-office, STM-1, of ITU-T Recommendation G.957[2].

The optical fibre presentation at the interface is conformant to (IEC) 60825-1 (2001)[3] & IEC 60825-2 (2000)[4] as a Class 1M Laser Product.

3.4 Openreach NTE Mounting

The Openreach NTE can be mounted within either Openreach or CP supplied equipment cabinets capable of accommodating standard 19 inch mounting practice. Alternatively, the Openreach NTE equipment can be positioned on a suitable horizontal, non-slip surface.

4. Power Supply

4.1 General

By placing a order with Openreach the customer has accepted the conditions placed by Openreach. In relation to powering of equipment, the customer must comply with the requirements of BS7671 and the details giving within the 'DC Power Planning and Installation Guide for WES-BES Products' document.

The Openreach BES 155 NTE is locally powered and offers AC or DC power options. The CP will be required to provide either 50Hz AC mains supply in the form of a standard 13 Amp power socket(s), or dual -50V DC power distributions and Earth connections, with all wiring colour schemes conforming to BS 7671 (IEE Wiring Regulations). It will be the customer's responsibility to ensure that the power supply is fused and safe for Openreach to use. These should be in close proximity to the NTE installation location.

4.2 Installation and Testing

In addition to the NTE and Chassis powering requirements below, a spare 50Hz AC mains supply 13Amp socket should also be provided in close proximity to the NTEs, to power Openreach test equipment during both initial commissioning and subsequent maintenance support activities.

4.3 AC Power Connection

AC power connection between Openreach equipment and the power socket will be made using a standard IEC320 C13-14 power lead fitted with standard 13A plugs. The NTE itself has dual power supply units internally, but only requires one mains supply socket.

- **For most installations:**

  This will require one power connection for each NTE provided, and the consumption of the Openreach NTE and power unit chassis in this managed service arrangement will be no more than 30 Watts per NTE.

- **For larger installations (at Openreach discretion):**
  At Openreach's discretion, where a large number of systems of one type are being deployed, a 16-slot NTE chassis version may be deployed. This will require two power

connections for each 16 slot chassis provided. The consumption with a maximum number of 16 service cards provided will be no more than 200 Watts per chassis.

4.4 DC Power Connection

The DC In-Line (Molex) connector is specified as the standard method of connecting DC power by Openreach, and represents the "Demarcation Point" between Openreach and the customer. At their site, the customer is required to provide suitable power and earth connection to, and be responsible for the supply, wiring and labelling to the demarcation point. Openreach will not supply or install the DC distribution system as part of the standard Ethernet installation.

- **Customer provided wiring up to the Openreach specified In-Line connector.**

Wiring, MCB isolation or fuse (i.e. C Type MCB or Cartage Fuse), must be provided by the customer, up to and including the DC in-line connector, as per BT's requirements stated within the 'DC Power Planning and Installation Guide for WES-BES Products' document with respect to;

(i) Correctly rated MCB/Fuse: refer to BES product handbook for correct rating
(ii) Correct labelling of wiring and MCB/fuse positions compliant with BS 7671,
(iii) Correct size of cable for required voltage drop at required maximum current,
(iv) Separately fused isolatable A & B power supplies, as detailed in the 'DC Power Planning and Installation Guide for WES-BES Products' document.

The in-line connector has a maximum current handling capability of 11A, and is not to be used for equipment requiring greater than a 11A supply (such as the Nortel OPTera 5200 equipment, which require 20A feeds).

4.5 Additional Details

For further details on the provision of DC Power, see the 'DC Power Planning and Installation Guide for WES-BES Products' available on the Openreach Ethernet website.

If there is a conflict between DC power information contained in the 'DC Power Planning and Installation Guide for WES-BES Products' and the SIN document, the order of precedence shall be as follows:
(a) DC Power Planning and Installation Guide for WES-BES Products
(b) SIN

5. Further information

Further enquiries concerning the connection availability between particular sites and for further information on the BES 155 service please contact your Openreach Sales & Relationship Manager, or see
https://www.openreach.co.uk/orpg/home/products/ethernetservices/backhaulextensionservices/bes.do

6. References

[1]	International Electrotechnical Commission 874 /14 - Connectors for Optical Fibres and Cables. Part 14: Sectional Specification for Fibre Optical Connector Type SC
[2]	ITU-T Recommendation G.957 - Optical interfaces for equipments and systems relating to the synchronous digital hierarchy. June 1999
[3]	(IEC) 60825-1 (2001) Safety of Laser Products Part 1 Equipment classification
[4]	(IEC) 60825 –2 (2000) Safety of Laser Products Part 2 Safety of Optical fibre communications systems

For further information or copies of referenced sources, please see document sources at:
https://www.openreach.co.uk/orpg/home/helpandsupport/sins/sins.do

7. Abbreviations

ATM	Asynchronous Transfer Mode
BES	[BT] Backhaul Extension Services
CPE	Customer Premises Equipment
DDF	Digital Distribution Frame
DSLAM	Digital Subscriber Line Access Multiplexer
IEC	International Electrotechnical Commission
IPRs	Intellectual Property Rights
LAN	Local Area Network
LLU(O)	Local Loop Unbundling (Operator)
MCB	Mini Circuit Breaker
NTE	Network Terminating Equipment
NTP	Network Terminating Point
PoC	Point of Connect
SDH	Synchronous Digital Hierarchy
SHDS	Short Haul Data Service
SIN	Suppliers Information Note

8. History

Issue	Date	Notes
1.0	27 May	First Issue

	2005	
1.1	29 Sep 2006	Service description updated to be Equivalence of Input compliant, block schematic changed.
1.2	30 Nov 2007	Service description amended in accordance with updated DC power guidance
1.3	18 Mar 2009	Co-location references replaced with Licenced Facility references. In-line connector's maximum current handling capability increased. Contact Point amended and editorials made.
1.4	March 2011	Amended to notify no new service will be made available
1.5	March 2013	Amended to notify removal of all modify options (Bandwidth upgrade, shift, re-site & rearrange)
1.6	April 2015	Amended to notify that this Product will longer be supported as from 1 April 2018 In section 5, Updated link for further information Change SINet site references from http://www.sinet.bt.com to http://www.btplc.com/sinet/
1.7	June 2020	Amended to notify changes to the end of life date and service level agreement. Changes to branding, from BT to Openreach including changes to reflect new Openreach SIN site and Openreach SIN email address
1.7	June 2021	Annual Review – no changes made – issue number therefore remains the same
1.7	June 2022	Added End of Life notification and briefing
1.7	June 2023	Annual Review – branding and font changes only – issue remains unchanged.
1.7	April 2025	Annual Review – no changes made – issue number therefore remains the same

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